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**SYSTEMS AND METHODS FOR SETTING
FUTURE TELECONFERENCE CALLS**

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FIELD OF THE INVENTION

The present invention relates to telecommunications and more particularly relates to systems and methods for setting up calls.

BACKGROUND OF THE INVENTION

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New technology development makes life easier and busier at the same time.

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Now, we accomplish more in one day than what we used to accomplish in one week years ago. As we increase our productivity, we are able to handle more tasks from more sources. A salesperson can handle more customers with orders, a lawyer can have more clients with cases, and an engineer can handle more supervisors with requests. This increase of tasks brings also more human interactions. More meetings are setup in work environments, and more teleconferences are set between geographically distant parties.

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The need for these meetings and teleconferences often arises during a conversation with another party or when an issue comes to mind while we are engaged in other activities. It is not always possible for us to record a reminder to ourselves to make a call to a particular party at later time, and as a consequence, we often forget to make the call to the other party.

When we are able to leave a note to remind ourselves to make a call at a particular time to a third party, we do not always remember to make such a call at that particular time. We may be engaged in other activity and totally forget to make the call, or we may be available to make the call, but we do not have the other party's telephone number close at hand.

The inability to make a timely call may cause a business to lose potentially lucrative opportunities, or create other detrimental implications for one's business. Therefore, there is a need for systems and methods to allow people to setup future conference calls and to be reminded about the calls in the future.

SUMMARY OF THE INVENTION

The present invention relates to, in its preferred embodiments, systems and methods for setting up future conference calls between at least two parties. A system according to the present invention has a server connected to a public switched telephone network (PSTN) or to the Internet. The server accepts meeting requests from users, who are located remotely, and setup one data entry for each meeting request. The meeting request has the following information: meeting date, meeting time, host's telephone number, and participants' telephone numbers. The server is also connected to a signaling system that enables the server to setup conference calls between two or more parties. The signaling system also permits the server to learn about the incoming calls to setup meeting requests. The server can learn whether a meeting request is from a landline telephone or a cellular telephone. The server can be operated by local telephone

companies or independent operators, and the service provided by the server can be paid per usage or on a subscription basis.

Users can input meeting requests anywhere and anytime by using any cellular or landline telephone or through the Internet, such as by using a computer or a personal digital assistance (PDA). A user can setup a future meeting request by using his landline or wireless telephone and dialing into the server. The server prompts the user for the meeting time, the user's telephone number or the host telephone number, and the telephone number of any other participant. The host telephone number does not have to be the telephone number used to setup the meeting request. If a meeting request is from a landline telephone number, then the server plays a series of audio prompts for the caller to enter the meeting information. If the meeting request is from a cellular telephone number with a LCD display screen, the server may send a display menu for the user to enter the meeting information. The meeting can be setup between two parties, a host and a participant, or more parties, if the switching platform is equipped with conferencing capabilities. Some switching platforms are equipped with conferencing bridge hardware that supports up to 6 conferencing parties per each bridge hardware. The meeting request can also be entered by use of a web page displayed on a computer screen, when the computer is connected to the Internet. The server provides web pages that accept meeting requests from the user, and the meeting request information is sent to the server through the Internet. The meeting information entered via the web page is transmitted through the Internet to the server. Alternatively, the input page can also be displayed on a PDA such as a PalmPilot™, if the PDA is equipped with radio frequency transmission

capabilities. The PDA can communicate with a server through a wireless connection and the Internet.

The server stores the meeting requests in a database. Each meeting request has an entry in the database, and each entry has a timer attached to it. At the meeting time, first
5 the server requests a connection to be setup to the host telephone number, and when the host telephone is answered, then the server requests another connection to be setup to a meeting participant. When the meeting participant answers the telephone, the two connections are bridged on a switch and the server is free to handle other conferences. If the host telephone number is not answered, then the server will retry later. The server
10 may retry a few times before dropping this conference request. If there are multiple participants besides the host, the server will dial all the participants and bridge their connections with the host.

The system according to the preferred embodiment of the present invention allows a user to setup a future conference call from any telephone device or any
15 computing device with access to the Internet. The user can setup a teleconference between his cellular telephone that he carries with him and another telephone, and the system will call his cellular telephone at the time of the meeting without any further action upon his part. This solves the problem of remembering the meeting time and remembering the conference parties' telephone numbers.

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DESCRIPTION OF THE DRAWINGS

The foregoing and other objects, aspects, and advantages will be better understood from the following detailed description of a preferred embodiment of the invention with reference to the drawings, in which:

5 Fig. 1 is schematic illustration of a system according to the present invention.

 Fig. 2 is a block diagram of software modules in a server according to an embodiment of the present invention.

 Fig. 3 is an entry of the database according to an embodiment of the present invention.

10 Fig. 4 is an illustration of an input screen on a computer.

 Fig. 5 is a flowchart for inputting a future conference request.

 Fig. 6 is a flowchart for setting-up a conference call.

 Fig. 7 depicts an alternate embodiment supporting a conference call through the Internet.

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DETAIL DESCRIPTION OF THE INVENTION

The terms "conference" and "meeting" are used interchangeably in this specification.

Referring now in greater details to the drawings, in which like numerals represent like components throughout several views, Fig. 1 is a schematic illustration of a network 10 according to the present invention. The network 10 has a call set-up system 12 connected to a public switched telephone network (PSTN) 14 and to the Internet 16. The

call set-up system 12 by a plurality of communication devices and computing devices.

For example, the call set-up system 12 is accessible by a landline telephone 18 connected to a public switch 20 and by a cellular telephone (radiotelephone) 22 through radio frequency transmissions to a communication tower 24 attached to a base station 26. The base station 26 is connected to a mobile switching center (MSC) 28, which is connected to a public switch 20. The call set-up system 12 can also be accessed by a computer 30 connected to an Internet service provider (ISP) 32 through telephone connections. The cellular telephone 22 can alternatively be a handheld personal digital assistance (PDA) device.

A user may be talking to his client and decide to setup a teleconference for the following week with this client to further discuss an issue. The user can use his cellular telephone 22 to setup a future conference call for the following week. He dials an access number, which may be a toll free number or any other number provided by the service provider, to gain access to the call set-up system 12. His cellular telephone 22 communicates through radio frequency signals to a communication tower 24, which is connected to a base station 26. His call is handled by a MSC 28, which will check the dialed number and route it through a public switch 20 and the PSTN 14 to the call set-up system 12. The call set-up system 12 prompts for the meeting date, the meeting time, the host telephone number, and at least one participant's telephone number. The host telephone number can be a telephone number other than one the user is using to setup the future conference call. If the user knows that he will be at his office at the meeting time, he may enter his office telephone number. If a secretary is setting-up a teleconference for her supervisor, the secretary may enter the supervisor's telephone number as the host

telephone number. The teleconference can have one or more participants beside the host, if the telephone switch used by the call set-up system is equipped with proper conferencing hardware. If the telephone switch has conferencing hardware that supports six parties, then a total of six parties can be connected to a teleconference. The user can also setup a future conference call by using a landline telephone 18. The call from the landline telephone 18 is handled by a public switch 20 and routed through the PSTN 14, if necessary, to the call set-up system 12.

The user can also use his computer to setup a future conference call. The user may be reading his e-mails on his computer when he realizes that he has to call his salesperson in another state the following day. He can setup a future conference call by using his computer. He accesses the call set-up system 12 web site, and inputs the meeting information such as meeting date/time, the host telephone number and the participant's telephone number into the web page. The information is transmitted through the Internet to the call set-up system 12. The computer 30 can be connected to the Internet in a number of ways, such as directly connected to a local area network (LAN) that is linked to the Internet 16, or connected to an Internet service provider (ISP) 32, which is connected to the Internet 16, through a telephone connection.

In an alternate embodiment, when the user is using a cellular telephone 22 with a liquid crystal display (LCD) screen, the call set-up system 12 may send an input screen to the cellular telephone 22 and the user can input the meeting information through the cellular telephone 22 keypad. The information entered is then transmitted back to the call set-up system 12.

The call set-up system 12 has access to a signaling system such as a common channel signaling system (CCSS). The signaling system allows the call set-up system 12 to setup conference calls between multiple parties.

The call set-up system 12 has a timer facility 42, a call facility 44, a bridging facility 46, a call control engine 48, and a conference database 50 as shown in Fig. 2. The control engine 48 handles meeting requests for a conference call setup. Meeting requests arrive at the call set-up system 12, and the call control engine 48 stores them in the database 50. Each meeting request is entered into an entry in the database 50. A timer in the timer facility 42 is created and associated with each individual entry. When the timer for an entry expires, the call control engine 48 then retrieves the meeting information from the entry. The call facility 44 first makes a call to the party hosting the meeting. After the hosting party answers the call, the call facility 44 then makes a call to the second party. If there are more than two parties in the meeting, the call facility 44 calls all the parties listed in the entry. After the calls are answered by at least two parties, the bridging facility 46 proceeds to bridge the calls. A public switch connected to the call set-up system 12 can handle the call bridging, and the call set-up system 12 is free to handle other meeting requests.

In an alternate embodiment, instead of creating individual timers for each entry, the call control engine 48 can also poll periodically each entry to see whether it is the time to setup the conference call for the parties listed in that entry.

Fig. 3 is an illustration of a database entry 60 according to a preferred embodiment of the present invention. The entry 60 stores the meeting information, such as the meeting date 62, the meeting time 64, the host's telephone number 66, the first

participant's telephone number 68, and optionally the second participant's telephone number 70. Optionally, the entry 60 can store information about as many participants as the number of the participants that the conferencing hardware supports. The call control engine 48 receives meeting requests, such as from users using cellular telephones 22, landline telephones 18, or computers 30. The meeting date 62 and meeting time 64 are checked before a new entry is created for the meeting. If the meeting date 62 and meeting time 64 have passed already, the call control engine 48 will reject the meeting request. The meeting request can have more than two parties. The call control engine 48 will reject meeting requests with only one party.

Fig. 4 illustrates how a user can use a computer 30 to setup a future conference call. First, the user connects his computer 30 to an ISP 32, if his computer 30 accesses the Internet 16 through an ISP 32. If his computer 30 is connected to a LAN linked to the Internet 16, then he can access the call set-up system 12 without dialing into an ISP 32. After connecting to a call set-up system 12, an input page 80 is displayed in the computer 30's screen. The input page 80 has the following fields for entering meeting information: meeting time 82, meeting date 84, host telephone number 86, list of participants telephone numbers 88, and a "submit" button 90. The user enters the meeting information on each field and then clicks the "submit" button 90 to have information transmitted to the call set-up system 12. After the meeting request is accepted, the call set-up system 12 sends a confirmation screen to the computer 30. If the meeting request contains errors, the call set-up system 12 will ask the user to re-enter the information. The input screen can be written in Hyper Text Markup Language (HTML), eXtended Markup Language (XML), or any other computer language suitable for this purpose. The

information transfer between the call set-up system 12 and the computer 30 follows industry protocols such as Transfer Control Protocol/Internet Protocol (TCP/IP).

Fig. 5 depicts a user process for a user to setup a future conference call according to the present invention. For example, a scientist, while doing his experiments in late evening, remembers that he needs to discuss with his colleague about his findings from the experiment. Instead of abandoning his experiments to search for his agenda to make an appointment for him to call his colleague the next day or continuing with his experiment and risking not remembering to make the call the next day, he can simply grab a telephone and dial into the call set-up system 22 at 100. After the call set-up system 22 answers, he enters the meeting time/date at 102, and the telephone number that he wants to use for the conference call at 104. After entering his telephone number as the meeting host, he enters the telephone number of his colleague at 106. If he wants to have more parties in the conference call, he can enter additional telephone numbers of other parties. After he enters all the telephone numbers, he needs only to hang up at 108, and the call is set for the next day.

Fig. 6 is a flowchart for the call set-up system process. The call control engine 48 monitors entries in the database 50 and checks for entries 60 that may have the meeting time up at 200. This monitoring and checking can be done by either constant polling of all entries 60 or by expiring timers sending interrupts to the call control engine 48. When it is time for setting-up a conference meeting call for a particular entry 60, the call control engine 48 retrieves the information from the entry 60 and dials the host's telephone number first at 202. If the host does not answer, meaning the host is not available, the call control engine 48 proceeds to disconnect and to remove the entry from the database

50 at 204. Alternately, the call control engine 48 can retry calling the host a few more times before canceling the conference call.

If the host answers the telephone call from the call control engine 48, the call control engine 48 starts to place calls to other meeting participants at 206. The call control engine 48 repeatedly places calls to all meeting participants listed in the entry 60. The call control engine 48 will bridge parties after they answer at 208. A switch that is connected to the call set-up system 22 can handle the call bridging. After the calls are bridged, the call set-up system 22 removes the entry from the database 50 and is ready to handle the next conference call.

In an alternate embodiment, the call set-up system 12 can setup conference calls over the Internet 16 as shown in Fig. 7. In this embodiment the participant's destination information is an e-mail address, or an Internet Protocol (IP) address, instead of a telephone number. Each participant must have a valid e-mail address or an IP address and a computer 30 properly equipped with Internet telephone software that is commercially available. The meeting request provides the meeting date 62, meeting time 64, and the e-mail or IP addresses of each participant. The call set-up system 12 stores this information in an entry 60 in the database 50. At the meeting time, the call set-up system 12 sets an Internet call to each party and bridges them together. The audio path between each party and the call set-up system 12 is through the Internet 16. The audio signals are digitized and sent over the Internet.

In yet another alternate embodiment, the call set-up system 12 provides a meeting confirmation number to the user, and the user can use this confirmation number to change his scheduled conference call. If the user decides to change or to cancel the conference

call, he can access the call set-up system 22, provide his confirmation number, and change his conference call. This procedure can also be used if the user no longer remembers the conference call's date and time. He can dial into the call set-up system 12, provide the confirmation number, and the call set-up system 12 will provide the
5 conference date and time from its database.

In yet another embodiment, the call set-up system may reside on the host's computer 30. The host computer 30 is directly connected to the Internet 16 and capable of setting up Internet calls between the user at the host computer 30 and another remote user.

10 The foregoing description of the preferred embodiments of the invention has been presented only for the purpose of illustration and description and is not intended to be exhaustive or to limit the invention to the precise forms disclosed. Many modifications and variations are possible in light of the above teaching.

The embodiments were chosen and described in order to explain the principles of
15 the invention and their practical application so as to enable others skilled in the art to utilize the invention and various embodiments and with various modifications as are suited to the particular use contemplated.